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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,872	02/08/2001	A. John Appleby	TAMK:225 12740.0225.NPU\$0	6720

7590

09/15/2003

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EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/779,872

Applicant(s)

APPLEBY ET AL.

Examiner

Wills M Monique

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 16-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 16-42 have been canceled by applicant's request.

Information Disclosure Statement

The information disclosure statement(s) filed February 8, 2001, December 10, 2002 and August 18, 2003 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 .

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1,5-11& 13-15 are provisionally rejected under the judicially created doctrine of obviousness - type double patenting as being unpatentable over claims 1,2,5,6,8,9 & 12-14 of copending Application No. 09/779,683. Application No. 09/779,683 discloses a fuel cell component comprising an electrode, intermediate layer and flow field-bipolar plate however, the application does not disclose a polymer electrolyte membrane disposed between identical fuel cell components. In other words, the instant claims are drawn to two fuel cell components of Application No. 09/779,683 separated by a polymer electrolyte membrane. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would be obvious to one of ordinary skill to employ electrodes of opposite polarity with an interposing polymer electrolyte because they are the basic and essential elements necessary for the fuel cell to function.

This is a provisional obviousness - type double patenting rejection because the conflicting claims have not in fact been patented.

More specifically, claims 1 & 13 of the instant application is shown in claim 1 of 09/779,683 where the porous flow field plate, intermediate layer and electrode are bonded together. Claim 5 of the instant application is shown in claims 1 & 2 of 09/779,683, wherein said porous metal flow field plate comprises a three dimensional reticulated metal structure. Claim 6 of the instant application is shown in claims 1& 5 of 09/779,683, wherein said fuel cell component of claim 1 of the instant application includes a protecting layer disposed on at least one surface. Claim 7 of the instant application is shown in claims 1,5 & 6 of 09/779,683, wherein said fuel cell component

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of claim 1 of the instant application includes a protecting layer comprising a metal or a metal oxide. Claim 8 of the instant application is shown in claims 1,5,6, 8 & 9 of 09/779,683, wherein said fuel cell component of claim 1 of the instant application includes a protecting layer comprising tin or tin oxide. Claim 9 of the instant application is shown in claims 1 & 12 of 09/779,683, wherein said fuel cell component of claim 1 of the instant application includes an intermediate layer comprising a polymer and high surface area carbon particles. Claim 10 of the instant application is shown in claims 1, 12 & 14 of 09/779,683, wherein said fuel cell component of claim 1 of the instant application includes an intermediate layer comprising a polymer selected from polytetrafluoroethylene, perfluoroethylene-perfluoropropylene copolymer, perfluoroalkoxy, or polyvanilidene fluoride. Claim 11 of the instant application is shown in claims 1 & 14 of 09/779,872, wherein said fuel cell component of claim 1 of the instant application includes an electrode comprising a polymer electrolyte and electrocatalyst.

Claims 14 & 15 of the instant application the claim are drawn to a method of making the fuel cell component by bonding all of the constituents and claim 1 of the co-pending application describes the same fuel cell constituents as being bonded directly to each other. Therefore, it is obvious that "layers bonded directly" to each other have been made by the method of "directly bonding" each layer to each other.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fronk et al. U.S. Patent 6,372,376 and further in view of Dufner et al. U.S. Patent 6,024,848.

Fronk teaches an electrically conducting fuel cell component comprising first and second metal flow fields 58 & 60 having a plurality of grooves 66 & 82 known as flow fields (col. 4, lines 1-5) and made of aluminum (col. 5, lines 10-15). The flow fields are bonded to first and second intermediate layers 94 comprising a plurality of conductive particles dispersed through an acid-resistant polymer matrix (col.4, lines 50-65). The conductive particles may include carbon black (col. 2, lines 50-60). See figures 4 & 5. The polymer comprises fluoro-elastomers such as polyvinylidene fluoride (col.5, lines 1-7). The conductive polymers may be selected from graphite, carbon and nickel (col.4, lines 50-60). The flow field also comprises a protective layer comprising nickel and other metal oxides (col.7, lines 5-25). The intermediate layers 94 are directly bonded to the flow fields, and first and second electrodes 4 & 6 (col. 3, lines 40-50) are bonded to the intermediate layer (col.4, lines 5-20 and col. 6, lines 1-10). The electrodes include a polymer electrolyte and electrocatalyst (col. 1, lines 15-25). The first and second

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electrodes are interposed by a polymer electrolyte membrane (col.1, lines 15-20). The first and second flow fields are bonded to a gas barrier or spacer metal sheet 62 (Fig.4 and col. 3, lines 60-68). The metal sheet is mad as thin as possible 0.002-0.02 inches (col. 3, lines 60-65). Additional plumbing 50,52 and 54 is provided for supplying liquid coolant to the bipolar plate 8 and end plates 14 & 16, to provide coolant (col. 3, lines 55-60).

Fronk does not expressly disclose that the flow field is porous. The reference is also silent to a protective layer comprising tin oxide.

Dufner teaches the employment of porous plates to decrease weight of the cell to meet specific operating demands (col.2, lines 40-50). The reference also teaches that it is well known in the art to employ tin oxide (col.8, lines 45-50). The tin oxide minimizes excess accumulation of liquid water at the cathode thereby restricting access of the gaseous oxidant to the cathode (col. 2, lines 55-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the porous flow files of Dufner in the cell of Fronk to decrease weight of the cell to meet specific operating demands.

Regarding the tin oxide, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ tin oxide coating on the flow field of Fronk, because Dufner teaches that it minimizes excess accumulation of liquid water at the cathode thereby restricting access of the gaseous oxidant to the cathode.

International Search Report

The WO 98/33221 document cited as an "X" on the International Search Report does not when taken alone teach the instant invention. The reference teaches a bipolar plate comprising flow fields and a gas barrier in the plate but is silent to the plate being directly bonded to an intermediate layer and said intermediate layer being directly bonded to an electrode.

The EP 0 817297 document cited as an "X" on the International Search Report does not when taken alone teach the instant invention. The reference teaches a bipolar and intermediate metal distributors being separated from the electrode by metal current collectors and gasket frames. The reference is silent to the plate being directly bonded to an intermediate layer and said intermediate layer being directly bonded to an electrode.

The WO 97/13287 document cited as an "X" on the International Search Report does not when taken alone teach the instant invention. The reference teaches a fuel cell having a membrane electrode assembly and a flow field. The reference is silent to the plate being directly bonded to an intermediate layer and said intermediate layer being directly bonded to an electrode.

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

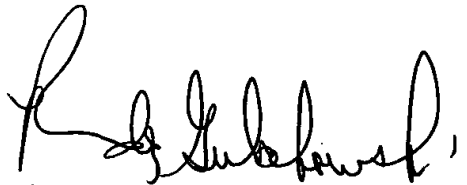
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

08/25/03


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